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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/062,193	01/31/2002	Steven Teig	SPLX.P0112	9411
23349	7590	04/07/2004	EXAMINER	
STATTLER JOHANSEN & ADELI P O BOX 51860 PALO ALTO, CA 94303			KIK, PHALLAKA	
			ART UNIT	PAPER NUMBER
			2825	

DATE MAILED: 04/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/062,193	<b>Applicant(s)</b> TEIG ET AL.	
	<b>Examiner</b> Phallaka Kik	<b>Art Unit</b> 2825	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 13 January 2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

### DETAILED ACTION

1. This Office Action responds to Applicant's amendment filed on 1/13/2004. Claims 1-20 are pending, wherein claims 1,4-9 have been amended and claims 12-20 have been newly added. Claims 1-20 have been examined. As per claims 1-11, Applicant's arguments are not persuasive; therefore, the previous Office Action is incorporated herein. As per claims 12-20, the claims are newly rejected as being necessitated by Applicant amendment.

#### *Priority*

2. Acknowledgement is made of Applicant's amendment to the first sentence of the specification, claiming benefit of priority of provisional applications.

#### *Drawings*

3. The drawings were received on 1/13/2004. These drawings are acceptable.

#### *Claim Rejections - 35 USC § 102*

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. **Claims 1,3,5,9,11,12,14,16,20** are rejected under 35 U.S.C. 102(b) as being anticipated by **Brandt et al.** ("Circuit multi-fault diagnosis and prediction error estimation using a committee of Bayesian neural networks", IEE Colloquium on Testing Mixed Signal Circuits and Systems, 23 October 1997, pp. 7/1-7/7).

6. As per **claims 1,9,12,20**, the physical parameters identified and extracted including a set of physical measurements are described on page 7/1, last two paragraphs to page 7/2, first two paragraphs, wherein the training cases with which the Bayesian inference is apply is further described on page 7/2, paragraph 3 to page 7/4, paragraph 4, wherein since the method of Brandt et al. is a computer implemented method, the computer-readable medium with a the set of instructions as newly claimed by Applicant, are inherently included as being necessary to implement the computer-implemented method.

As per **claims 3,5,11,14,16**, the characteristics be resistances are described on page 7/4, wire and neural network are illustrating in Fig. 1.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. **Claims 2,4,6-8,10,13,15,17-19** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Brandt et al.** ("Circuit multi-fault diagnosis and prediction error estimation using a committee of Bayesian neural networks", IEE Colloquium on Testing Mixed Signal Circuits and Systems, 23 October 1997, pp. 7/1-7/7) in view of **Niu et al.**, ("A Bayesian approach to variable screening for modeling the IC fabrication process",

1995 IEEE International Symposium on Circuits and Systems, Vol. 2, 30 April 1995, pp. 1227-1230).

As per **claims 2,4,6-8,10,13,15,17-19, Brandt et al.** disclose all of the elements of claim 1 which the claims depend respectively. However, **Brandt et al.** failed to teach specifically the electrical characteristics estimation includes capacitance and delay or the sub-problem comprising a section of interconnect wire and nearby interconnect wiring within a define halo, and/or the physical measurements being spacing, wire width, and wire length. **Niu et al.** teach to adapt the Bayesian approach using the variable screening for modeling the IC fabrication so that the physical parameters and measurements are taken into account for the particular desired electrical characteristics to estimate or model (see page 1227). It would have been obvious to one ordinary skilled in the art at the time of the invention to further incorporate the variable screening of **Niu et al.** into the system/method of **Brandt et al.** so that the various physical parameters (i.e., spacing, wire width, and wire length, a section of interconnect wire and nearby interconnect wiring within a define halo) are taken into account for the particular desired electrical characteristics to estimate or model, while making such calculation efficient and practical as taught by **Niu et al.** (page 1227, paragraph 3).

#### **Remarks**

9. The objections of **claims 1-11** due to the noted informalities are withdrawn in light of Applicant's amendment filed on 1/13/2004 which corrected the informalities.
10. As per **claims 1-11**, Applicant argued that **Brandt et al.** failed to perform the extraction to output a set of electrical characteristics or using the physical

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measurements as input, wherein the system of the Brandt et al reference begins with a set of electrical characteristics as a set of input parameters and then outputs an estimate of electrical performance. The Examiner is not persuaded. First, Applicant's claims calls for identifying a set of physical measurements of integrated circuit components for an extraction sub-problem. As taught on page 7/2, second paragraph, the eight variables were extracted (e.g., the value of the three resistances, the voltage offset level of the response, the maximum voltage offset of the response ( $V_{max}$ ), the times  $t_1$ ,  $t_2$ ,  $t_3$ ) from the experiment that use actual pulse signal to stimulate the circuit; thus the eight variables are derived from actual measurements from this experiment. In effect, these extracted eight variables are the set of physical measurements defining the particular sub-problem (e.g., the faults associated with t2n2222 differential amplifier with circuit mirror of Fig. 1--page 7/1, last paragraph). Second, as to Applicant's assertion that **Brandt et al.** do not output a set of electrical characteristics, Applicant's claims call for solving the specific extraction sub-problem for each of the training cases using the associated set of physical measurements as an input to an accurate physics based-model to generate an associated output. Thus, Applicant's referenced to the "output a set of electrical characteristics" refer to "an associated output" generated in the solving step/means. By Applicant's admission, "an estimate of electrical performance" outputted would satisfy this criteria. Further, the results of the method is found on page 7/4 (see Results section) to diagnose the multifaults in an integrated circuit (e.g., differential amplifier) and to estimate the associated error bars.

11. As per **claims 12-20**, the claims are newly rejected above as being necessitated by Applicant's amendment. The reason for the rejections are similarly to claims 1-9 above, wherein since the method of Brandt et al. is a computer implemented method, the computer-readable medium with a the set of instructions as newly claimed by Applicant, are inherently included as being necessary to implement the computer-implemented method.

### ***Conclusion***

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Therefore, Applicant is requested to consider them carefully in response to this Office Action.

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phallaka Kik whose telephone number is 571-272-1895. The examiner can normally be reached on Flexitime.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew S. Smith can be reached on 571-272-1907. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

15. **Applicant should note that effective May 1, 2003, the United States Patent and Trademark Office has a new Commissioner for Patents address for transitioning to the new Office location in Alexandria, VA, wherein correspondence in patent-related matters to organizations reporting to the Commissioner for Patents must now be addressed to:**

**Commissioner for Patents**

**P.O. Box 1450**

**Alexandria, VA 22313-1450**



**MATTHEW SMITH  
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